

Petfood.

Production plants from a single source.



Proven extrusion processes ...

Integral element of the production process.

Extrusion of petfood

Petfood processing focuses on the production of feeds for animals with a high emotional value but low economic usefulness. Nonetheless, balancing the components and gentle processing are at the center of the related quality considerations. Extrusion is therefore increasingly proving to be the right tool for modern Petfood.

A large number of petfood products are made by extrusion.

- Dog and cat foods, directly extruded and dried, dry or semi-moist. These constitute the biggest market segment.
- Textured proteins of vegetable and/or animal proteins, extruded and dried. These meat-like semi-finished products, usually rehydrated and used as complete canned feeds, may also be applied in "instant dry menus". These are prepared with hot water before feeding.
- Wet-textured products are also based on a mixture of vegetable and animal proteins, but include much higher meat addition rates. Typically, they have water contents of 60 to 70%. They are extruded as endless strands and are cut after the extruder and then processed into complete canned feeds.
- Treats, functional foods, or bites given to animals to keep them busy.
- Feed for ornamental fish, high-grade complete feeds capable of maintaining the health even of exotic species in aquariums over prolonged periods of time.

Extrusion process

In the extrusion process, a cooking operation follows the specific processing of the raw materials by blending, mixing and grinding. The goal is essentially to achieve the following effects:

- Modification the starch
- Denaturation of proteins
- Shaping, expansion, texturing
- Improvement of taste

The required heat is mainly added in the form of direct steam during preconditioning. In the extruder, the mass preheated to about 95 °C is further heated by mechanical processing so that temperatures of about 120 – 160 °C are achieved.

The patented "Density Control System" allows the steam pressure of the hot dough mass to be controlled while the mass is still inside the extruder. This, enables the bulk density to be controlled across a wide range without compromising the cooking degree. The energy released can be returned almost without any emissions to the conditioning stage.

Shaping / cutting

The die hole geometry is crucial in the process, as the hot melt has to be depressurized, shaped, and cut. A movable cutting device allows the die holes to be controlled and the knives to be exchanged even during the process. Since a considerable volume of moisture is evaporated at this point, hot air addition and a good aspiration system are needed to prevent the extrudates from sticking together. Among other things, using special die holes also allows the production of two-colored products, or the simultaneous production of different shapes and colors.

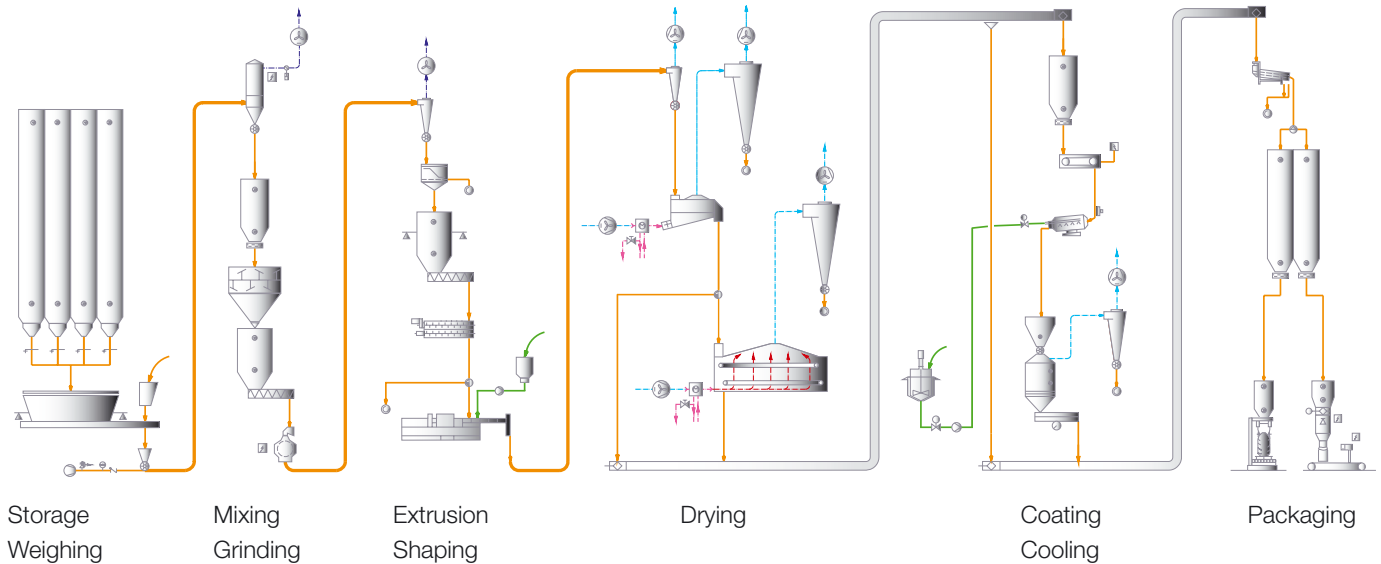
Two-stage drying

The hot and steaming extrudates very rapidly release the free surface moisture to the hot air stream. Once the surface has been dried, the drying action is limited by the diffusion rate inside the pellets, and the air stream can be reduced. Such a multi-stage drying process consists of a hot air conveying system and a fluid-bed dryer, followed by a belt-type or counter-current dryer. This process allows very fast, gentle, and non-deforming drying to the necessary final moisture content even of soft and sticky products.

Coating / Cooling

Usually, the dried extrudates are coated while still warm directly after the dryer. During this stage, it is possible to add fats, flavorings, attractants, colors, and even powdered ingredients. Depending on the temperature and the specific surface area of the extrudates, up to 12% liquids can be absorbed in the coating drum and the subsequent cooler.

Integral customer solutions. From intake to shipping.



Extensive range of services. From engineering to training.

Extrusion pilot plant

The functional Extrusion pilot plant supports practical development of new products, processes, and equipment, complementing scientific approaches to problem solutions. Various process stages can be simulated here either in isolation or in a wide variety of combinations.

Engineering

Our project engineers will ensure smooth handling of your order, making sure our systems are seamlessly integrated in your production environment.

Installation and start-up

The installation and start-up specialists of the Business unit "Pasta and Extruded Products" guarantee competent installation and construction site management and a smooth commissioning to start-up.

Training of customer personnel

On your request Buhler offers you a personnel training on site also the opportunity to perform the training in our pilot plant. You take profit of the highly diversified program, executed by our specialists.

Customer service

Our engineers and service specialists are available for on-site consulting, ensuring trouble-free operation of our equipment throughout its service life. This concept is supported by a worldwide, efficient spare parts service.

Core elements from Bühler.

The crucial process operations.

BCTC preconditioner

The preconditioning concept is based on the separation of the overall process into two stages: component mixing and retention to allow cooking.

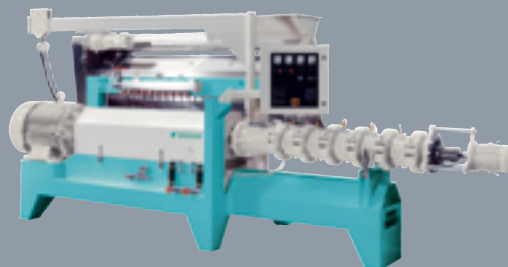
The BCTC preconditioner is available in six sizes ranging from 100 to 1,600 liters capacity, with processing throughputs of 100 to 20,000 kg/h.



BASH single-screw extruder

The BASH single-screw extruder is a cost-effective tool for cooking and shaping products which are normally direct-expanded.

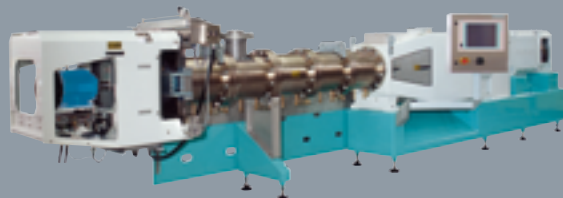
The machine is characterized by its adjustable process section, its various drive options, a number of accessories such as water-cooled or electrically heatable barrels, and its ease of operation.



BCTA twin-screw extruder

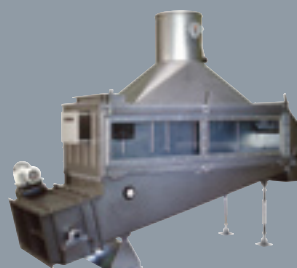
The modular twin-screw extrusion system covers the entire capacity range, from laboratory-scale to high-capacity production machines.

The process configuration of the machine is carefully matched to the specific application.



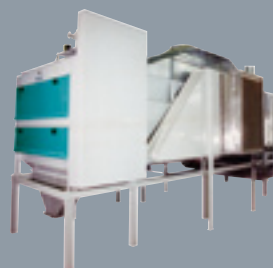
OTW fluid-bed dryer

The continuous OTW fluid-bed dryer/cooler is excellently suited to the thermal treatment of cereal grains or of extrusion products with a size starting at 0.25 mm. The fluid-bed, designed as a cross-flow heat exchanger, fluidizes the individual product particles and dries/coolers them gently and efficiently along the entire bed length.



DNTK belt-type dryer

The DNTK belt-type dryer/cooler is applied for drying aquafeed and petfood products. Thanks to its modular design, it is possible to carefully match single-belt and twin-belt dryers to the required throughput rate.



...for high-value petfood.

Varied characteristics in shape and color.



Direct-expanded kibbles

Dog and cat foods with moisture contents below 8%.



Multicolored products

Continuous process for which a patent is pending enables multicolored products to be made using a single extruder.



Marbled petfood

Direct-expanded products where a special process is applied to obtain a “marble” effect in the product using a second color.



Two-colored products

Products based on the same formulation but which are differently colored and intermingled in a single shape at the end of the extrusion process.



Filled pillows

Dry or semi-moist. The filling is added at the end of the extrusion process. The filled strands are pinched apart by a downstream separating system.



Semi-moist petfood

Soft dog and cat foods with moisture contents above 13% and a bulk density of 400–600 g/l.

Bühler AG
CH-9240 Uzwil, Switzerland
T +41 71 955 11 11
F +41 71 955 33 88
E-Mail: extrusion@buhlergroup.com
www.buhlergroup.com

